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**CUSTOMER-FOCUSED PRODUCT DEVELOPMENT**  
**AN OUTDOOR INDUSTRY PERSPECTIVE**

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## **CUSTOMER-FOCUSED PRODUCT DEVELOPMENT AN OUTDOOR INDUSTRY PERSPECTIVE**

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Petter Stenmark  
Östersund, 17th of April 2012

## **ABSTRACT**

Being customer-focused is often considered to be a key success factor in product- or service development. This kind of approach may comprise many things in practice, such as formal or informal methods and activities that are carried out to identify and meet, or preferably exceed, customer needs and expectations. The overall purpose of this thesis is to contribute to a greater knowledge about the use and function of methods, activities and tools regarding customer-focused product development in the outdoor industry.

The thesis is based on three papers, all related to customer-focused product development within the outdoor industry. Two empirical studies have been conducted. In the first one, the outdoor companies' own experiences of customer involvement in product development are examined. In the second study, the use and function of environmental labels as drivers of attractive quality within the outdoor industry are explored.

A new methodology for customer-focused product development is also presented. It is aimed to be used as a hands-on support for designing for the satisfaction of customer needs at different levels in practice, especially those that have been found to be important in the creation of attractive quality and customer loyalty.

Keywords: product development, innovation, quality, customer focus, outdoor industry

## **SAMMANDRAG**

Att vara kundfokuserad anses som viktigt i produkt- och tjänstutveckling. Detta förhållningssätt kan innebära många saker, till exempel användandet av formella eller informella arbetssätt och metoder för att identifiera kundernas behov och förväntningar för att kunna möta eller helst överträffa dessa. Det övergripande syftet med denna avhandling är att bidra till mer kunskap om metoder, aktiviteter och verktyg inom kundfokuserad produktutveckling i outdoorbranschen.

Avhandlingen är baserad på två konferensbidrag och en artikel inom området "kundfokuserad produktutveckling". Två studier har genomförts. I den första har outdoorföretagens egna erfarenheter av kundernas roller i produktutvecklingen undersökts. Den andra studien har handlat om användningen av och funktionen hos miljömärkningar.

Avhandlingen presenterar också en ny metodik inom kundfokuserad produktutveckling. Denna är tänkt att utgöra visuellt stöd i designprocessen med fokus på kundbehov på olika nivåer, speciellt på de typer av behov som har konstaterats vara viktiga i skapandet av attraktiv kvalitet och kundlojalitet.

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## LIST OF PAPERS

This thesis is mainly based on the following three papers:

- Paper 1 (P1) *Customer involvement in product development: Experiences from Scandinavian outdoor companies*  
Stenmark, P., Tinnsten, M. and Wiklund, H. (2011)  
Proceedings at the 5th Asian-Pacific Congress on Sports Technology, Melbourne, Australia
- Paper 2 (P2) *Exploring environmental labelling as a means of product differentiation in the outdoor industry*  
Stenmark, P. and Lilja, J. (2011)  
Proceedings at the 14th QMOD Conference, San Sebastian, Spain
- Paper 3 (P3) *Designing for the Satisfaction of High-level Needs: Introducing the Ideation Need Mapping (INM) Methodology*  
Stenmark, P. and Lilja, J. (2012)  
Submitted for international publication



# 1. INTRODUCTION

This chapter presents the background, purpose and research questions of the thesis.

## 1.1. Background

Find out and make sure you meet, or even exceed, the needs of your customers! This kind of exhortation, highlighting the importance of customer needs, occurs it would seem mandatorily in the quality literature of today (e.g. Sandholm, 2000; Sörqvist, 2004; Bergman & Klefsjö, 2010). Developing a deep understanding of customer needs is also often stressed as a critical part of product- or service development in general (e.g. Henard & Szymanski, 2001; Cagan & Vogel, 2002; von Hippel & Katz, 2002; Ulrich & Eppinger, 2008). According to Kahn et al. (2005) leaving the customer out of product development is one of the reasons found in almost every study of why new products fail. In commonly used management concepts and principles of today, such as Lean, Six Sigma or TQM, the importance of focusing on customers is also emphasized (Bergman & Klefsjö, 2010). Obviously, it is often suggested that customers should be in focus, preferably active and involved in the product development process. This kind of approach to product- or service development is usually described as “customer-focused”.

Being customer-focused in product development may comprise many things in practice, such as formal or informal methods and activities that are carried out to identify and meet, or preferably exceed, customer needs and expectations. Product-related as well as non- product-related attributes or various benefits could here be of importance from the customer’s point of view. Designs, ancillary services associated with the product or its lifecycle environmental impact are all examples.

However, the application of a customer-focused approach has often found to be hard to realize in practice (e.g. Cagan & Vogel, 2002; Olsen & Welø, 2011). As stated by von Hippel (2005), fully understanding customers’ needs is often a costly and inexact process. According to Deming (1986) new products and new types of services are generated by knowledge, imagination, innovation, risk, trial and error and enough capital. As a consequence, there are many circumstances that affect the outcome of a new product or service development. Due to increased competition it is also possible to compare offers and make active choices as a customer to a greater extent today than ever before. The use of customer information in different market contexts is also mostly unknown (Sandén, Gustavsson & Witell, 2006). In consequence, a further exploration of the concept of customer focus in product development in practice for different product categories is motivated.

One such category is outdoor gear and clothing<sup>1</sup>, a business area of importance in the Mid Sweden region. Its excellent conditions for outdoor recreation have led to a growing number of practitioners and in consequence a growing market for outdoor products. A recent study points out that the outdoor recreation value of the Swedish economy is just over 34000 million Swedish Crowns and contributes to 75600 jobs (Fredman et al., 2010). Many of the companies in the outdoor industry are small but act in a market where the competition is getting harder and the range of products is increasing. As stated by Bratå et al. (2009) Nordic outdoor companies must find alternative innovation processes to continue to deliver more valuable products than their competitors.

## **1.2. Purpose and research questions**

The overall purpose of this thesis is to contribute to more knowledge about the use and function of methods, activities and tools regarding customer-focused product development in the outdoor industry. To be more specific, the following research questions are to be answered:

**RQ1:** How do outdoor companies view customer involvement in product development?

**RQ2:** To what extent is environmental labelling currently being used, and how does it function, as a driver of attractive quality within the outdoor industry?

**RQ3:** How can companies within the outdoor industry work more systematically with high-level needs in their product development process?

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<sup>1</sup> Herein referred to as outdoor products

### **1.3. Structure of the thesis**

Chapter 1 contains the background to and the purpose of this thesis.

Chapter 2 includes a theoretical framework. The theories that in some way are included in the thesis are described and discussed. Also a presentation of the research field is provided.

Chapter 3 presents the methodological choices that have been made in the research process and discusses their complications for the results that were achieved.

Chapter 4 contains a summary of the appended papers that this thesis is based on. A list of these is provided on page viii.

Chapter 5 summarizes the conclusions that have been drawn. It also includes a discussion and suggestions for future work.

## 2. THEORETICAL FRAMEWORK

This section provides a theoretical framework to the research that is presented in this thesis. It includes descriptions and definitions of the concepts that are included.

At first, a definition of a customer is needed. In this thesis customers are defined as anyone who is affected by the product or by the process used to produce the product (Juran, 1988). With this wide definition, users as well as retailers are examples of customers.

### 2.1. Products and product development

There are different definitions of products and product development. Cagan & Vogel (2002) defines a product as a device that provides a service that enhances human experiences. According to Ulrich & Eppinger (2008) a product is something sold by an enterprise to its customers. Doyle (2002) defines a product as anything that meets the functional needs of customers, a physical product or a functional one. As stated by Kahn et al. (2005), the traditional view of a product has changed to a consideration of the total utility created through the customer's experience of interacting with a company and its offerings. People now place more value on interconnected and interrelated values that accompany many products (ibid.). Kahn et al. (2005) means that it is a term used to describe all goods, services and knowledge sold. Ljungberg & Larsson (2001) state that all products consist of a combination of a physical part and a service part. Unfortunately, most of the definitions of a product include both the item itself as well as its non-product-related attributes or various benefits that are included. As shown in Table 1 academic communities also can have different definitions of products.

**Table 1 Comparison of perspectives of a product (from Krishnan & Ulrich, 2001)**

	<b>Marketing</b>	<b>Organizations</b>	<b>Engineering design</b>	<b>Operations management</b>
<b>Perspective on product</b>	A product is a bundle of attributes	A product is an artefact resulting from an organizational process	A product is a complex assembly of interacting components	A product is a sequence of development and/or production process steps

Consumers not only use products for their functional consequences or benefits, but also for their psychosocial consequences (Antonides & van Raaij, 1998). In this

thesis a product includes both the physical goods itself and its non-product-related attributes or various benefits that are included. This kind of definition works well for outdoor products since all these elements can be of importance for the creation of customer satisfaction.

Ulrich & Eppinger (2008) define product development as *“the set of activities beginning with the perception of a market opportunity and ending in the production, sale, and delivery of a product”*. It is an interdisciplinary activity but marketing, design and manufacturing functions are always central (ibid.). Krishnan & Ulrich (2001) define product development as *“the transformation of a market opportunity and a set of assumptions about product technology into a product available for sale”*. Kahn et al. (2005) defines product development as *“the overall process of strategy, organization, concept generation, product and marketing plan creation and evaluation, and commercialisation of a new product”*. Following, product development is often explained as an interdisciplinary process. It is also frequently described as iterative (e.g. Johannesson et al., 2004) and includes identifying and meeting customer needs. In this thesis product development is seen as an iterative process that starts with some kind of idea generation and results in a new product available for purchase, with activities of identifying and meeting customer needs included.

## **2.2. Quality and customer satisfaction**

From being associated with statistical control of mass-produced goods, quality is today often seen from a holistic view that includes continuous improvements in the entire organization before, during and after production. This section presents some of the definitions.

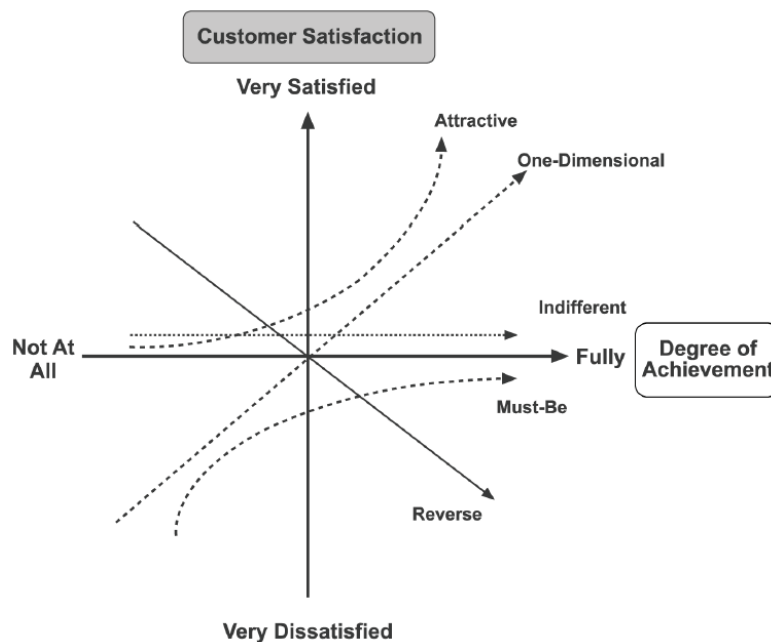
Already in 1931, Walter M.A Shewhart concluded that there are objective as well as subjective sides of product quality. With this definition, objective quality represents measurable time-independent properties while the subjective side represents what we think, feel, or sense as a result of the objective reality. Shewhart pointed out that it is the subjective measure that is of commercial interest, or as he wrote *“...it is the subjective side that we have in mind when we say that the standards of living have changed”* (Shewhart, 1931). Armand Vallin Feigenbaum also includes the subjective, customer-centered side, in his definition of product and service quality that is *“...the total composite product and service characteristics of a marketing, engineering manufacture, and maintenance through which the product and service in use will meet the expectations of the customer”* (Feigenbaum, 1991). Juran (1992) states that two different kinds of product quality are the product features that impact on sales, and freedom from deficiencies that impact on costs. Deming (1986) points out that quality must be measured by the interaction between the product itself, the user and how the product is used. Sandholm (2000) defines product quality as

*“its ability to satisfy customer needs”* while Bergman & Klefsjö (2010) define it as *“its ability to satisfy, or preferably exceed, the needs and expectations of the customer”*.

One common characteristic of these definitions are that quality is put in relation to customer needs. They point out the customer as the one who finally determines product or service quality. Quality is therefore here defined as a multi-dimensional concept, defined and judged by the customer.

The degree of customer satisfaction is pointed out as the ultimate measurement of quality (Bergman & Klefsjö, 2010). A conceptual model of the different types of quality elements is the Kano model, first presented by Kano et al. (1984). In the Kano model the quality elements are divided into categories that are based on the correlation between physical fulfilment and user satisfaction. Quality elements that provide satisfaction when fulfilled but do not lead to dissatisfaction when they are not fulfilled are named attractive. The elements that result in satisfaction when fulfilled but dissatisfaction when not fulfilled are called one-dimensional. These are expected by the customer. Elements that are taken for granted when fulfilled, but result in dissatisfaction when not fulfilled are named must-be. The customer thinks that these are absolutely necessary. Elements that do not result in either satisfaction or dissatisfaction are classified as indifferent. Elements that cause dissatisfaction when fulfilled and satisfaction when not fulfilled are classified as reverse. The relation between these five elements and customer satisfaction are described in Figure 1.





**Figure 1 Overview of the theory of attractive quality (adopted from Witell & Löfgren, 2007)**

Moreover, customers' preferences may change over time. For example, elements that when first introduced were classified as attractive can change to be merely expected after some time (e.g. Kano, 2001; Löfgren, Witell & Gustafsson, 2011).

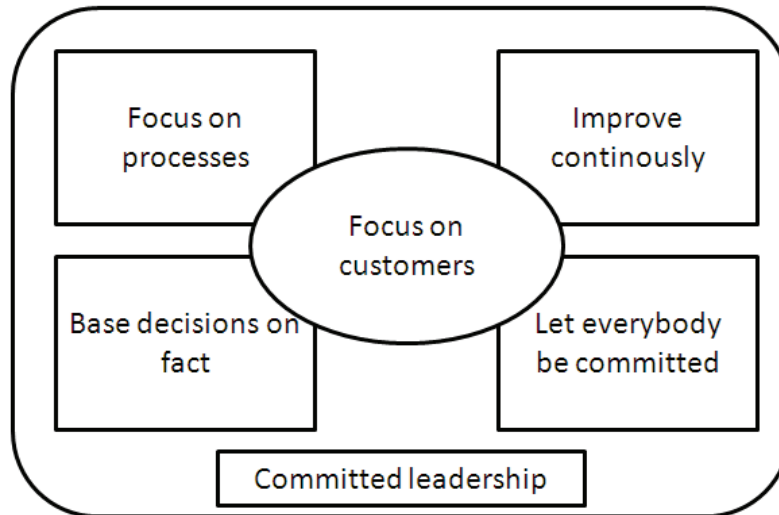
One tool that could be used to examine how different product characteristics are experienced by various customers is the Kano questionnaire. By asking people how they feel if the characteristic is present, and if the characteristic is not present, classification of a quality attribute can be done. The Kano questionnaire can either be five-level as described in Kano et al. (1984), or three-level as described in Kano (2001). Witell & Löfgren (2007) recommend practitioners to use the five-level Kano methodology.

### **2.3. Quality management**

According to Bergman & Klefsjö (2010) Quality management aims to create increased customer satisfaction with a reduced amount of resources. In ISO 9000:2005, quality management is defined as *“coordinated activities to direct and control an organization with regard to quality”*.

Total Quality Management (TQM) is nowadays an often-used concept for Quality Management (Sandholm, 2000; Sörqvist, 2004; Bergman & Klefsjö, 2010).

The basis of the concept can be described in form of cornerstones representing the basis of TQM, as shown in Figure 2:



**Figure 2 The cornerstones of TQM (from Bergman & Klefsjö, 2010)**

As seen in Figure 2, the central cornerstone is *Focus on customers*. This aspect points at the importance on finding out what customers want and need, and then trying to fulfil these needs (Bergman & Klefsjö, 2010). *Basing decisions on facts* implies actively looking for relevant information, which is then compiled and analyzed (ibid.). *Focus on processes* refers to the identification of organized activities in order to find out how to minimize resources and satisfy customers (ibid.). *Improve continuously* refers to the view that there always is a way to improve quality and that continuous improvements of the company's goods and services is vital (ibid.). *Let everybody be committed* refers to the view that it is important for all employees to be committed and to participate actively in decision-making and improvement work (ibid.).

Committed leadership represents the importance of strong and committed leadership to create a culture for successful and sustainable quality improvements (ibid.).

#### **2.4. Customer involvement in product development**

Many of the most important and novel products and processes in a range of fields have been developed by user firms and by individual users (von Hippel, 2005). Bråttå et al. (2009) points out that there are a number of studies of user innovators of sport equipment industry that point in the same direction: users are important for innovation. There are also many examples from different types of

products when customer involvement can provide valuable input to the development process (e.g. Sawhney et al., 2005; Dahlsten, 2006; Lundberg, 2007).

However, simply involving customers is not a guarantee for success (Olsen & Welo, 2011). Research has given somewhat inconsistent findings regarding customer involvement in product development (Gruner & Homburg, 2000; Brockhoff, 2003). One obstacle pointed out by Kahn et al. (2005) is that customers cannot tell a firm exactly what a product should look like because they are poor reporters of their own needs and behaviour. Patnaik & Becker (1999) explains this problem further; *"...while people easily can express their preferences among a set of known options, solutions that aren't immediately apparent can go unvoiced"*.

Examples of formal methods of customer involvement that in case studies have been considered successful are the use of focus groups and internet-based platforms for co-creating with customers (e.g. Sawhney et al., 2005; Dahlsten, 2006). In sum, previous research has concluded somewhat different findings regarding customer involvement in product- or service development. How to involve, when to involve and who to involve, are circumstances that may affect the result.

## **2.5. Product certification and environmental labelling**

Certification is a common name for processes that are used to decide whether a product, system or person meets certain specified requirements. Consequently, a certificate can work as a guarantee to the customer that the product or service meets these requirements. Certificates may be either mandatory or voluntary. They can consist of requirements of different kinds but are often related to security, social and environmental issues. Different types of environmental certifications are becoming more common (Swedac, 2011).

Products that are certified may in some cases be allowed to use a label to communicate the awarding of the certificate to the customer. In the international standard ISO 14024:1999, the overall goal of environmental labelling is clearly described as *"...through communication of verifiable and accurate information, that is not misleading, on environmental aspects of products and services, to encourage the demand for and supply of those products and services that cause less stress on the environment, thereby stimulating the potential for market-driven continuous environmental improvement"* (ISO 14024:1999, p.6). Obviously, environmental labels are meant to work as a quality attribute and a means of differentiation.

The ISO14020 series distinguishes between different types of environmental labels. Type 1 environmental labelling programs, specified in ISO14024, award their environmental label to products which meet a set of predetermined requirements. These labels are voluntary, can be operated by public or private agencies and can be national, regional or international in nature. Type 2 environmental labelling is specified in ISO14021 and refers to self-declared

environmental claims. These are made without certification from an independent party. Type 3, specified in ISO14025, includes environmental declarations and are meant to be used to compare different products with each other.

In addition to the actual criteria of the environmental label, several factors affect how customers are influenced by these. To reach the overall goal of ISO 14024, the content of the label needs to be communicated to the customer in an objective way and the label criterion has to be easily understood. There appears to be a proportion of consumers that find product labels hard to understand (D'Souza, Taghian & Lamb, 2006). Moreover, lack of information and subjective information is confusing to the customers and could cause a negative attitude to environmental labels in general.

## **2.6. High-level needs in product development**

Oliver (2010) points out that needs can be of different kinds, providing different reactions depending on whether fulfilled or not. Needs also may occur on various levels, as illustrated in the need hierarchy introduced by Maslow (1943, 1954, 1999), where some needs are more apparent and connected to physiological needs, such as hunger and pain, while other needs seem to occur on a higher level and relate to an often unexpressed strive for such as self-actualization, belonging and self-esteem. As stated by Olsen & Welo (2011) products should relate to people at a higher level through emotional experience.

When it comes to bringing understanding of these various levels of needs into practice, the current methodologies and tools for customer surveys are generally limited to the low-level needs (Woodruff, 1997). The same seemingly goes for the specific tools and methodologies advocated within quality management such as Quality Function Deployment (QFD) and Failure Mode and Effect Analysis (FMEA). Within the field of marketing, where high-level needs appear to be mostly discussed today, two related methodologies with the ambition and potential to actually touch upon high-level needs can be found, in terms of the means-end hierarchy (Oliver, 2010) and the attribute-value-mapping (Goldenberg et al., 2009). However, both suffer from being a support for finding out if there might be any connections between an existing products/service and the satisfaction of high-level needs rather than being a support for designing and innovating new products and services with the satisfaction of high-level needs as an ambition.

This becomes problematic for several reasons, one being that the satisfaction of high-level needs, rather than lower level needs, actually appears to have the greatest potential for the creation of high loyalty among customers (Söderlund, 2001). A deep understanding of customer needs, and especially high-level needs, has the potential of being a strong driver of innovation during product development and design. Lilja & Wiklund (2007) highlighted the satisfaction of

high-level needs as a strategy for the successful creation of attractive quality, in terms of strong positive customer affect and emotions such as delight.

### 3. RESEARCH METHODOLOGY

There are different ways to do research, depending on purpose, claims and the view of knowledge. As described in Chapter 1, the overall purpose of my research was to contribute to more knowledge about the use and function of methods, activities and tools regarding customer-focused product development in the outdoor industry. Here I will describe and discuss my methodological choices. As a starting point I will use Figure 3 below. It provides an explanation of the research process with possible choices at different layers:

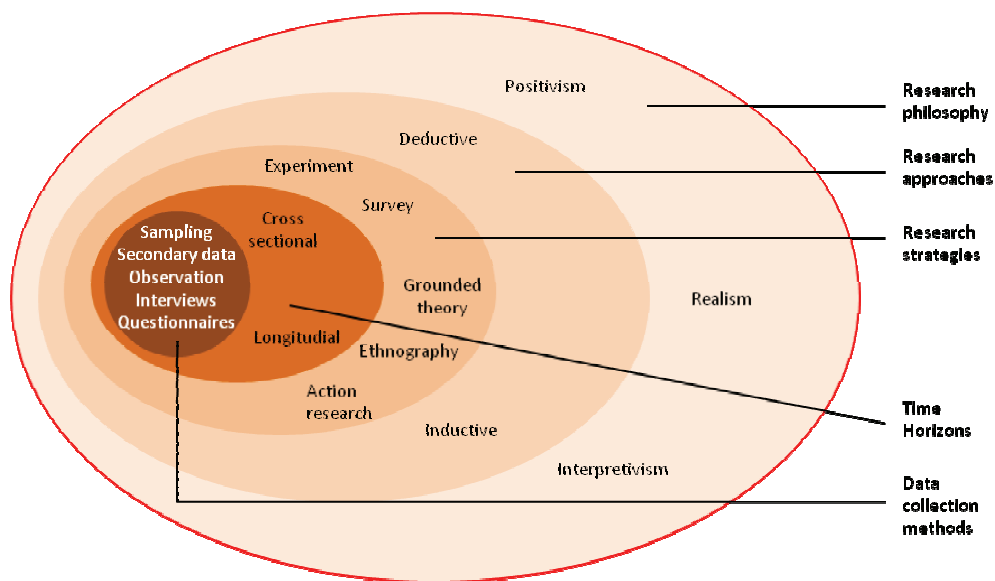


Figure 3. The research process (from Saunders et al., 2003)

#### 3.1. Research philosophy and approach

Research philosophy depends on the way the researcher thinks about the development of knowledge (Saunders et al., 2003). Philosophies are given somewhat different weight in different literature and research fields. Thurén (1991) declares that the main views of knowledge are positivism and hermeneutics. Saunders et al. (2003) points out that positivism, realism and interpretivism have an important part in business and management research.

Positivism and realism share a belief that there is an external reality separate from our description of it (Bryman & Bell, 2011). Also these philosophies believe that the natural and social sciences should apply the same kinds of approaches to the collection of data and to explanation (ibid.). Interpretivism represents the belief that it is necessary to explore the subjective meanings motivating people's actions

in order to be able to understand these (Saunders et al., 2003). As a consequence, a strategy that respects the differences between people and the objects of the natural sciences is required in this philosophy (Bryman & Bell, 2011). Generalization of results is less interesting in this philosophy. I have collected views from individual companies but also tried to study the outdoor industry as one entity. My research could not be classified as just one of these philosophies. As my intention first was to do quantitative analyses of my studies, my research at first tended to be more positivistic. It became more and more interpretive afterwards, when I became more aware of the individual differences.

Induction and deduction are frequently described as two ways of using theory in research. In a deductive approach theory and hypothesis is developed and tested (Saunders et al., 2003). In an inductive approach data is collected and theory is developed as a result of the data analysis (ibid.). According to Bryman & Bell (2011) induction and deduction are better thought of as tendencies rather than as a hard-and-fast distinction. Hence, research could perhaps better be described as more or less inductive or more or less deductive. The research presented in this thesis represents approaches that tend to be more deductive than inductive, since most of it is based on existing theory.

Depending on the type of data that is analyzed research is usually classified as quantitative or qualitative. Quantitative research can be construed as a research strategy that emphasizes quantification in the collection and analysis of data (Bryman & Bell, 2011). On the other hand, qualitative research usually emphasizes words rather than quantification (ibid.). In addition to these two, Creswell (2003) includes mixed methods as a third approach. The knowledge claims, the strategies, and the method all contribute to a research approach that tends to be more quantitative, qualitative or mixed (ibid.). Table 2 presents typical procedures of these three approaches.

**Table 2 Quantitative, qualitative and mixed methods procedures (from Creswell, 2003)**

<b>Quantitative research methods</b>	<b>Qualitative research methods</b>	<b>Mixed methods research methods</b>
Predetermined Instrument based questions Performance data, attitude data, observational data, and census data Statistical analysis	Emerging methods Open-ended questions Interview data, Observational data, document data, and audiovisual data	Both predetermined methods and emerging methods Both open-ended and closed-ended questions, Multiple form of data drawing on all possibilities Statistical and text analysis

As my research is both based on quantified attitude data and answers of open-ended questions, I classify it as a mix methods procedure according to Creswell's classification.

### **3.2. Research strategy and data collection methods**

The selection of research strategy depends on the purpose of the research. Saunders et al. (2003) categorizes purposes into exploratory, descriptive and explanatory. Yin (2003), who also presents these purpose categories, points out that each of the strategies can be used for each purpose. Descriptive research identifies and describes the variability in different phenomena, such as attitudes and opinions (Saunders et al., 2003). Both of my studies focused on attitudes of product developers and customers. Consequently, they could be classified as mainly descriptive.

Saunders et al. (2003) presents six research strategies: experiment, survey, case study, grounded theory, ethnography, and action research. Survey studies can be used with the intent of generalizing from a sample of a population (Creswell, 2003). As described in Saunders (2003) a survey strategy is usually associated with the deductive approach and allows the collection of a large amount of data from a sizable population in a highly economic way. A survey strategy was chosen in both S1 and S2 since I wanted to measure attitudes and capture data from a large number of respondents. Questionnaires were used as a data collection method. A questionnaire is an often used data collection method for survey strategies and can be used for descriptive as well as explanatory research (Saunders et al., 2003).



### 3.3. Overview of the research process

I started my PhD studies in May 2009. Throughout the entire research process literature studies have been conducted. Two empirical studies (S1 and S2) have been performed. The thesis is based on the three papers (P1, P2 and P3) that are trying to answer the research questions (RQ1, RQ2 and RQ3). Figure 4 describes my research process, from the very beginning to the completion of this thesis.

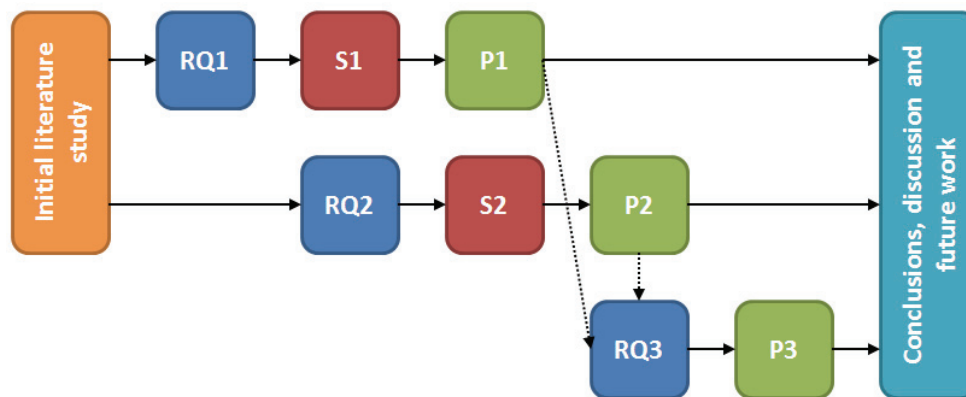


Figure 4 Overview of the research process

At first my focus was to further explore the concept of customer-focused product development generally, to get an overview of this broad research area. The first question asked was what it means to be “customer-focused” in product development in practice. An initial literature study was conducted to get an overview of the field in order to identify parts of it to study more in detail. This included books within the field, research articles that primarily were found in the Scopus database, and other publications of interest. One of many results that came out from the study was that customer involvement in the development process frequently was pointed out as a factor that has positive impact on the outcome of product development (e.g. Sawhney et al., 2005; Dahlsten, 2006). It seemed to be an interesting area to study further in the case of the outdoor industry and specifically the outdoor companies own experiences of involving customers in their product development. As a result, the first research question (RQ1) of the thesis was formulated as:

**RQ1:** How do outdoor companies view customer involvement in product development?

To answer RQ1, S1 was carried out. A questionnaire was created and sent out to Swedish and Norwegian companies within the Scandinavian Outdoor Group. The

survey study was done mainly according to two objectives that connected to RQ1: to find out more about the companies own experiences of customer involvement in the development process and to examine if there was a need for more involvement in practice. The study resulted in P1, *Customer involvement in product development: Experiences from Scandinavian outdoor companies*, presented at the 5th Asia-Pacific Congress on Sports Technology in Melbourne, Australia.

Another part of customer-focused product development that came up from the initial literature study was the use and function of certificates and labels as product attributes. During the Scandinavian outdoor summit in Åre (Sweden) in March of 2011 the use and function of environmental certification and labelling in practice also was frequently discussed. As a result, the second paper came to focus on the use, and function, of environmental labelling and certification from the customers' point of view. RQ2 thereby is:

**RQ2:** To what extent is environmental labelling currently being used, and how does it function, as a driver of attractive quality within the outdoor industry?

The study resulted in P2, *Exploring environmental labelling as a means of product differentiation*, presented at the 2011 QMOD conference in San Sebastian.

As a freestanding continuation of P1 and P2, I came to focus more on the handling of high-level needs in product development. High-Level needs appear to have the greatest potential for the creation of high loyalty among customers (Söderlund, 2001). Satisfaction of high-level needs is also mentioned as a strategy for the successful creation of attractive quality (Lilja & Wiklund, 2007). However, the current methodologies and tools for customer surveys generally have mostly been found to be limited to the low-level needs (e.g. Woodruff, 1997). This resulted in RQ3:

**RQ3:** How can companies within the outdoor industry work more systematically with high-level needs in their development process?

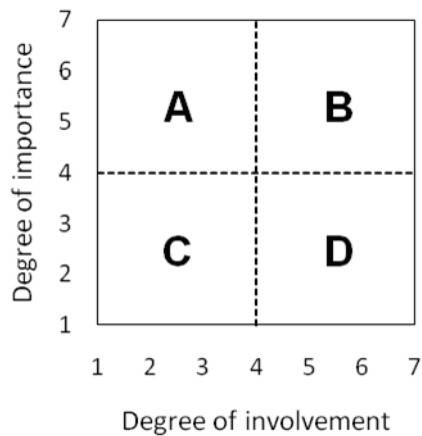
P3 aims to introduce a methodology that can support the process of understanding and designing for the satisfaction of high-level needs in practice. The proposed methodology is named Ideation Need Mapping (INM).

### **3.3.1 Study 1**

A survey was created and sent out to 33 managers of Swedish and Norwegian outdoor companies. These were all members of the Scandinavian Outdoor Group (SOG). SOG, registered in Sweden, is an association that consists of more than 30

member companies from Norway, Sweden, Finland, Denmark and Iceland. It was founded in 2000 as an industry initiative to serve outdoor retailers and media in export markets (Scandinavian Outdoor Group, 2011).

The survey, attached in Appendix 1, included closed and open-ended questions about the company and its experiences of customer involvement in each of the phases in the development process. The closed questions included estimation of degree of involvement and degree of importance. In this part, the participants had to estimate how important they think it is to involve users, retailers and professional users in their product development processes. They also had to estimate to what extent they actually did involve each of the customer groups. A seven-point Likert scale was used to answer these questions and the answers were combined in a diagram shown in Figure 5:



**Figure 5 Result presentation of survey questions**

The four fields (A-D) in Figure 5 represent different experiences of customer involvement. Points that are close to the upper left corner of field A represent companies that would like to involve their customers much more than they do today. Points that are close to a diagonal from (1, 1) to (7, 7) in Fig. 2 represent companies that think that they involve the customers just as much as they want to.

The questionnaire was sent out in June 2010. A reminder was sent out in the middle of August and a second one in the beginning of September. In sum 18 companies answered the questionnaire, giving a response rate of 54 percent. The companies that answered the questionnaire are presented in summary in Table 3:

**Table 3 Companies that participated in S1**

<b>Number of employees</b>	<b>Product category</b>
10-50	Clothing
>100	Clothing
10-50	Clothing
10-50	Equipment
10-50	Equipment
10-50	Shoes
10-50	Clothing
10-50	Clothing and equipment
?	Equipment
1-9	Equipment
10-50	Equipment
1-9	Equipment
51-100	Equipment
10-50	Clothing
10-50	Clothing
10-50	Shoes
51-100	Clothing
>100	Clothing

The questionnaire from S1 is attached in the Appendix.

### **3.3.2 Study 2**

A Kano questionnaire was designed to investigate how some of the most commonly used environmental labels for textile outdoor products are perceived by customers. The respondents had to answer the questions below for each label, followed by a picture of the actual label:

- If you want to buy a new ski jacket and it displayed this label, how would you feel?
- If you want to buy a ski jacket and it didn't display this label, how would you feel?

For each question, five possible answers were provided: positive, expect that, neutral, can accept that and don't like it. The questions were tested on eight students who also did the data collection. The questionnaire was given directly to ski tourists in the region of Åre in Sweden during the Easter holidays of 2011. All respondents were in the age between 18 and 35 years, about as many women as

men. The answers were classified according to age, gender and their awareness of environmental impact when buying new products.

### **3.4. Validity, reliability and generalization**

Validity is concerned with whether the findings are really about what they appear to be about (Saunders et al., 2003). To increase validity, a frontpaper with instructions regarding the data collection of S1 was provided. In S2, instructions to the participants were also provided. The questions were formulated as clearly as possible to avoid misunderstandings.

According to Easterby-Smith et al. (2002:53), cited in Saunders et al. (2003), reliability can be assessed by posing following three questions:

1. Will the measures yield the same result on other occasions?
2. Will similar observations be reached by other observers?
3. Is there transparency in how sense was made from the raw data?

Many participants were included in both S1 and S2 to increase the reliability. The questions in S1 were clearly formulated, with possibilities to make comments as well. The results of S1 were treated individually and the companies were categorized depending on both product category and size. The data analysis of S1 was adjusted to the response rate that was achieved, to increase the reliability of the study. The surveys of S1 were answered by managers of each company, with insight into their company's product development. The questions of S2 were tried out before the study was performed.

Saunders et al. (2003) describes generalisability as the extent to which research results are applicable to other research settings. The methodology suggested in P3 can be used for development of other product categories as well.

## **4. SUMMARY OF APPENDED PAPERS**

In this chapter the three appended papers are briefly presented.

### **4.1. Summary of Paper 1**

#### **Background**

One important part of product development is to identify users' needs and expectations and translate these into design parameters. However, fully understanding users' needs is often a costly and inexact process (Von Hippel, 2005). The future costs of a product, during manufacture as well as use, are to a large extent determined at the development stage (Bergman & Klefsjö, 2010). Consequently, it is important to identify the users' requirements as early as possible. One approach to identifying needs and expectations is to involve the customers in the product development process. Their experiences, ideas and opinions could be of great value to help the development team to identify problems and to find design solutions. Von Hippel (2005) points out that users are the first to develop many and perhaps most new industrial and consumer products. However, customers may also have needs that they are unable to identify. Although the use of customer information has been recognized as a key success factor for new product development, the differences in the use of customer information in different market contexts are mostly unknown (Sandén, Gustavsson & Witell, 2006).

#### **Purpose**

The purpose of this paper was to examine how and to what extent customers are involved in new product development in the outdoor industry. Another purpose was to find out if the companies believed that there is a need to involve the customers more than they really did.

#### **Methodology**

A survey study was performed with Swedish and Norwegian outdoor companies that were members of Scandinavian Outdoor Group, an association that was founded in 2000 as an industry initiative to promote export sales of outdoor gear manufacturers from Norway, Sweden, Finland, Denmark and Iceland.

#### **Results and findings**

18 of 33 surveys were returned giving a response rate of 54 percent. It was discovered that the many of the outdoor companies do not involve users very much in early phases of product development, but most of the companies think that it is important. One conclusion is that there is an interest in involving users in

the product development process more than is done today. The small companies in particular often had this view. Interviews and product testing were found to be the most common methods of involving the users.

## **4.2. Summary of Paper 2**

### **Background**

The vital process of distinguishing a product or offering from others to make it more attractive to a particular target market is referred to as product differentiation (Chamberlin, 1933, 1951). The ideas about product differentiation suggest that your product needs to be perceived as positively unique, or else it will die. Since all products to a greater or lesser extent cause environmental impact during their life-cycle, one such means might be by sustainability and environmental aspects. In order to realize this potential a company's social and environmental responsibility need to be communicated to the customers. To do this, using a certification process combined with eco-labelling is a systematic approach. A certificate from an independent party, confirmed by a label, could function as a guarantee to the customer that the product fulfills specified requirements. However, this has proved to be more problematic in practice. Misleading labels that have been used to profit from the "green market" may have negatively affected the customers' opinion about eco-labels in general (Lyon & Maxwell, 2011).

### **Purpose**

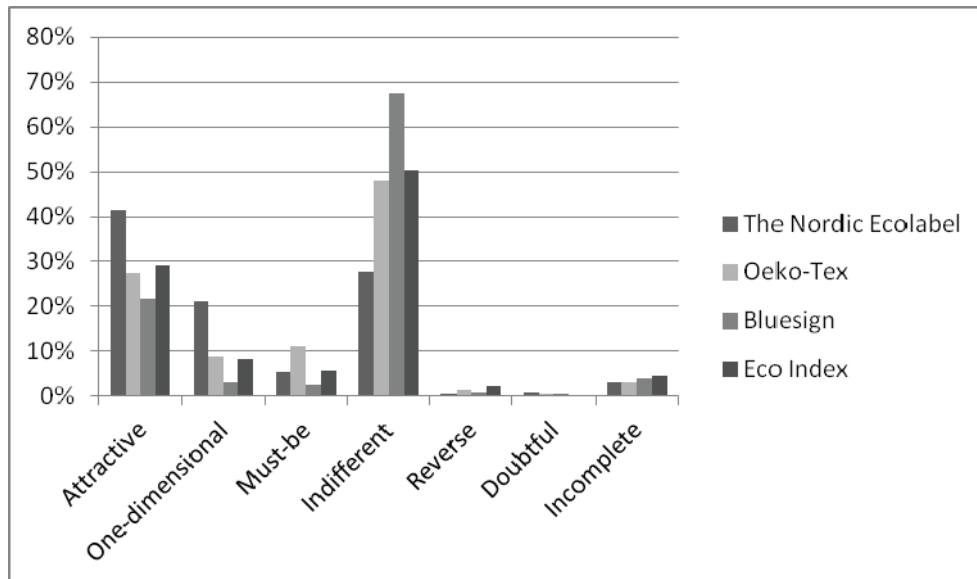
The purpose of the study was to explore to what extent environmental labelling is currently being used, and whether it functions, as a means of differentiation and a driver of attractive quality within the outdoor industry.

### **Methodology**

A Kano questionnaire was designed to investigate how the included labels have an influence on customers. The questionnaire was given directly to ski tourists in the region of Åre in Sweden during the Easter holidays of 2011. All respondents were in the age between 18 and 35 years, about as many women as men. The answers were classified according to age, gender and their awareness of environmental impact when buying new products.

### **Main findings**

227 answers were collected and classified by their identified quality element, according to the Kano questionnaire. The result was plotted in Figure 6.



**Figure 6 Results from Kano Questionnaire (S2)**

One conclusion of the paper is that many customers find environmental labels attractive, although more attention may need to be paid by the companies to communicating these to the customers. In the paper grading the total environmental impact is mentioned as one possible way. In order for the environmental certification of products and the delivery of an ecolabel to become more significant competitive advantages, ecolabel programs must be credible and transparent, and the methods must be harmonized (Lavallée & Plouffe, 2004).

#### **Additional results to P2**

The Nordic Ecolabel was found to be more attractive than the others. This may have many reasons. One might be that the Nordic EcoLabel might be a more established and better known by the customers, since it is not only a label for textile products. When buying a textile product it is possible to find out more about each of the labels. This has not been taken to account in the results. Also, this study does not evaluate each of the certification processes in detail.

### **4.3. Summary of Paper 3**

#### **Background**

Developing a deep understanding of customer needs is consequently stressed as a critical part of product or service development in general; see e.g. Henard & Szymanski, 2001; Cagan & Vogel, 2002; Ulrich & Eppinger, 2008; Bergman & Klefsjö, 2010. However, needs do occur on various levels (e.g. Maslow, 1943, 1954,



1999). The satisfaction of high-level needs, in contrast to lower level needs, actually appears to have the greatest potential for the creation of loyalty among customers (Söderlund, 2001). The satisfaction of high-level needs is also highlighted as a strategy for the successful creation of attractive quality, in terms of strong positive customer affect and emotions such as delight (Lilja & Wiklund, 2007).

However, when it comes to bringing understanding of these various levels of needs into practice, the current methodologies and tools for customer surveys are generally limited to the low-level needs (Woodruff, 1997). The same seemingly goes for the specific tools and methodologies advocated within quality management such as Quality Function Deployment (QFD) and Failure Mode and Effect Analysis (FMEA).

### **Purpose**

The paper aims to introduce a methodology that can support the process of understanding and designing for the satisfaction of high-level needs in practice. The satisfaction of high-level needs has seldom been in focus when it comes to customer satisfaction surveys or the process of new product or service development.

### **Methods and Findings**

Literature was screened for the various descriptions of high-level needs. Those were “translated” into proposed design questions.

The paper introduces “Ideation Need Mapping” (INM), a methodology that can support the process of understanding and designing for the satisfaction of high-level needs in practice. INM is further described in the full paper (see appended papers).

## **5. CONCLUSIONS AND DISCUSSION**

This chapter summarizes the conclusions that have been drawn. It also includes a discussion and suggestions for future work.

### **5.1. Reconnecting to the research questions**

**RQ1:** How do outdoor companies view customer involvement in product development?

The overall conclusion of this study is that users are not very involved in the early phases of product development, though most of the outdoor companies think that it is important. Obviously, most companies wish to engage the users in the product development process more than they actually do. In particular small companies had this view. This is not surprising since customer involvement could be both a costly and inexact process. Another reason as to why the degree of customer involvement in many cases is limited can be that the companies do not want to reveal information about the product before its release. Interviews and product testing were found to be the most common methods of involving the users.

**RQ2:** To what extent is environmental labelling currently being used, and how does it function, as a driver of attractive quality within the outdoor industry?

Many customers find environmental labels attractive, although more attention may need to be paid by the companies to communicating these to the customers. In the paper grading the total environmental impact is mentioned as one possible way. This could give the company the opportunity to get a total score that they can improve continuously. The score is also easy to understand by the customers, provided that it reflects the real environmental impact.

**RQ3:** How can companies within the outdoor industry work more systematically with high-level needs in their development process?

By introducing the Ideation Need Mapping (INM) methodology, further described in Paper 3, the authors hope to contribute with a first step in this direction, towards a hands-on support for designing for the satisfaction of high-level needs in practice.

## **5.2. Conclusions and discussion**

Parts of this thesis have examined how general ideas about customer-focused product development are applied in practice in the outdoor industry. As has been described, there is a need for more insight on how to successfully involve customers more deeply in practice in the product development. Many of the companies do have a conviction that this is important. I also believe that there are great opportunities for many of the companies in the outdoor industry to improve customer-focus in their product development. Hopefully, this thesis will provide some guidance on how they can do it in practice.

One of the lessons I have learnt from this research project is that customer needs can be of different kinds, occur at different levels and prove different kind of satisfaction. I think this insight can be worthwhile, regardless of whether formal methodologies such as the suggested INM are applied or not in the development process. The satisfaction of High-level needs is in fact very important for the creation of attractive quality as well as for achieving loyal customers (e.g. Lilja & Wiklund, 2007; Söderlund, 2001).

## **5.3. Future work**

As mentioned in P3, the research has not only pointed out that there is a lack of methods being used to identify needs on the higher level, but also suggested one as well. As future work, evaluation and refining of the Ideation Need-Mapping methodology needs to be done, preferably by means of a case study.

More results are available from S2. The data can be further analyzed with other categorizations, such as the customers' awareness of environmental issues when buying new products, or gender. In order for the environmental certification of products and the delivery of an ecolabel to become more significant competitive advantages, ecolabel programs must be credible and transparent, and the methods must be harmonized (Lavallée & Plouffe, 2004). This could be a subject for further research, as well as how to communicate the label criteria more effectively.

Further research will in my case be focused on testing, validating, and improving the INM methodology by practical application.

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